

REMARKS

I. STATUS OF CLAIMS

Claims 1, 4, 6-40 and 43-58 are pending. Claims 4, 6-11, 21-39 and 48-58 are withdrawn from consideration as allegedly being drawn to a non-elected invention. No claim is amended herein.

II. REJECTIONS UNDER 35 U.S.C. § 103

A. Rejection based on JP Patent Publication 4-307787 to Iketani (“Iketani”), JP Patent Publication 1-249333 to Nagamine et al. (“Nagamine”), and WO 93/24314 to Papageorge et al. (“Papageorge”).

The Examiner rejects claims 1, 12-20, 40, and 43-47 under 35 U.S.C. § 103(a) as allegedly being unpatentable over Iketani in view of Nagamine, and further in view of Papageorge. Office Action at page 2. According to the Examiner, Iketani discloses all the claimed elements except Iketani fails to disclose a non-degreased fabric and the specific particles as now claimed. *Id.* at page 3. In order to remedy the deficiencies of Iketani, the Examiner turns to Nagamine and Papageorge.

As in the previous Office Action, the Examiner relies on Nagamine for its teaching regarding a non-degreased fabric. *Id.* at pages 3-4. In addition, the Examiner relies on Papageorge for its teaching of particles. *Id.* at page 3. Specifically, the Examiner asserts that Papageorge teaches printed circuit boards comprising a laminate formed by impregnating a resin, such as epoxy into a glass cloth substrate wherein the base resin has highly thermally conductive particles incorporated therein, wherein the particles can be a nitride, a carbide, or graphite. See *id.*; see also Papageorge at pages 4-5. The Examiner concludes that “the skilled artisan would have been reasonably motivated to modify the teachings of Iketani by using a nitride, carbide or

graphite as the filler material, as taught by Papageorge, to produce a laminate with high thermal conductivity.” Office Action at page 4. Applicants continue to disagree and respectfully traverse the rejection for the reasons of record and the additional reasons discussed below.

In making a rejection under 35 U.S.C. § 103, the Examiner has the initial burden to establish a *prima facie* case of obviousness. See M.P.E.P. § 2143, 8th Edition, Rev. 6 (Sept. 2007). In its recent decision in *KSR Internat'l Co. v. Teleflex Inc.*, 550 U.S. ___, 82 U.S.P.Q. 2d 1385 (2007), the Supreme Court confirmed that the “framework for applying the statutory language of §103” was still based on its landmark decision in *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 148 U.S.P.Q. 459 (1966). Under *Graham*, there are four factors for consideration when determining whether an invention is obvious:

- (1) the scope and content of the prior art;
- (2) the differences between the prior art and the claims at issue;
- (3) the level of ordinary skill in the art; and
- (4) secondary considerations.

The obviousness or non-obviousness of the claimed invention is then evaluated in view of the results of these inquiries. *Graham*, 383 U.S. at 17-18, 148 U.S.P.Q. 467; see also *KSR*, 550 U.S. at ___, 82 U.S.P.Q.2d at 1388.

Indeed, to establish a *prima facie* case of obviousness, the examiner must:

make a determination whether the claimed invention “as a whole” would have been obvious at that time to that person. Knowledge of applicant’s disclosure must be put aside in reaching this determination, yet kept in mind in order to determine the “differences,” conduct the search and evaluate

the “subject matter as a whole” of the invention. The tendency to resort to “hindsight” based upon applicant’s disclosure is often difficult to avoid due to the very nature of the examination process. However, impermissible hindsight must be avoided and the legal conclusion must be reached on the basis of the facts gleaned from the prior art.

M.P.E.P. § 2142. It is important to note that the prior art references relied upon in a rejection “must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention,” when such reasons are articulated by the Examiner. *Graham*, 383 U.S. at 17, 148 U.S.P.Q. 467; See also M.P.E.P. § 2141.03(VI).

The key, moreover, “to supporting any rejection under 35 U.S.C. § 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious.” M.P.E.P. § 2142. The Federal Circuit has stated that “rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” M.P.E.P. § 2142, citing *In re Kahn*, 441 F.3d 977, 988, 78 U.S.P.Q.2d 1329, 1336 (Fed. Cir. 2006).

In independent claim 1, the reinforced laminate comprises, “(a) a matrix material; and (b) at least one non-degreased fabric..., wherein at least a portion of the fabric has a resin compatible coating..., and the resin compatible coating comprises a plurality of particles....” Independent claim 40 also includes a matrix material and a non-degreased fabric, wherein at least a portion of the fabric has a resin compatible coating comprising a plurality of particles. From the plain language of independent claims 1 and 40, it is clear that the resin compatible coating comprises a plurality of particles. Indeed, as

previously pointed out, the coated glass fiber strands of the claimed invention can lessen or eliminate the need for incorporating thermally conductive materials in the matrix resin, which improves laminate manufacturing operations and lowers costly matrix material supply tank purging and maintenance. Applicants' specification at page 6, lines 25-28 (emphasis added). Further, in the present invention the coated glass fibers provide a higher thermal conductivity phase than the matrix material, i.e., a preferential path for heat dissipation and distribution, thereby reducing differential thermal expansion and warpage of the electronic circuit board and improving solder joint reliability. *Id.* at lines 20-24.

As discussed above, recognizing the deficiencies in Iketani and Nagamine, the Examiner cited Papageorge for its teaching of particles as recited in Applicants' claims 1 and 40. Papageorge, however, only discloses a base resin matrix material having thermally conductive particles dispersed therein. See Papageorge at page 6, lines 30-31 (emphasis added); see also Fig. 1. Papageorge is completely silent with respect to 1) a resin compatible coating which is compatible with the matrix material and 2) incorporation of nitride, carbide, or graphite particles into a resin compatible coating. Therefore, Papageorge fails to remedy the deficiencies of Iketani. Nothing in Papageorge could suggest the incorporation of particles into a coating for at least a portion of a fabric.

Further, the prepreg disclosed in Iketani is obtained by impregnating a fibrous base material with a varnish containing a particular filler, such as short glass fibers, glass beads, glass balloons, aluminum hydroxide, aluminum oxide, clay, talc, and wollastonite, and the like, and then impregnating the material with a varnish containing

no filler. See *id.* at Abstract, paragraph [0004] to [0006]. Despite the Examiner's contentions, one of ordinary skill in the art would not have been motivated to modify the teachings of Iketani by impregnating the fiber substrate with a varnish containing nitride, carbide, or graphite particles because Papageorge only teaches or suggests the incorporation of these particles in the resin matrix, not a coating for at least a portion of a fabric.

In view of the foregoing, Applicants submit that the Examiner has failed to establish that independent claims 1 and 40, and the claims depending therefrom, are *prima facie* obvious based on the cited references. Accordingly, Applicants respectfully request that the Examiner reconsider and withdraw the rejection.

B. Rejection based on WO 93/24314 to Papageorge et al. (“Papageorge”) and JP Patent Publication 1-249333 to Nagamine et al. (“Nagamine”).

The Examiner rejects claims 1, 12-13, 16-20, 40 and 45-47 under 35 U.S.C. § 103(a) as allegedly being unpatentable based on Papageorge in view of Nagamine. Office Action at page 6. Applicants respectfully traverse this rejection for at least the following reasons.

As discussed in Section II.A. above, Papageorge and Nagamine fail to teach or suggest all the claim limitations. Accordingly, the Examiner has failed to establish that independent claims 1 and 40, and the claims depending therefrom, are not *prima facie* obvious based on Papageorge and Nagamine.

In view of the foregoing, Applicants respectfully request that the Examiner reconsider and withdraw the rejection.

III. CONCLUSION

In view of the foregoing remarks, Applicants respectfully request reconsideration of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to Deposit Account No. 06-0916.

Respectfully submitted,

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